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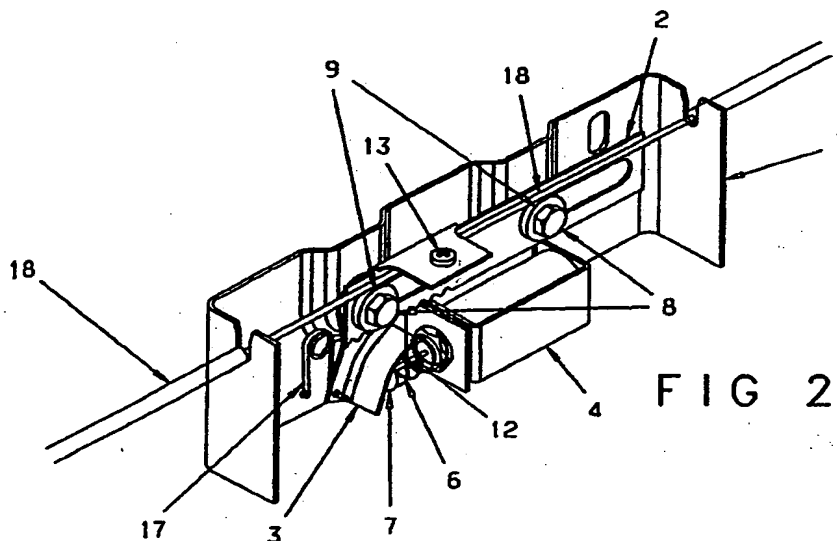
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GB 2222204 A US 4702094 A

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(54) Electro-mechanical hood release cable locking system

(57) A vehicle hood release cable is locked by a electro-mechanical system which responds to a vehicle alarm. A plate 2 is clamped to the cable 18 and can be engaged by a detent 3 driven by a solenoid actuator 4 to prevent cable movement. When the vehicle alarm is triggered power is fed to the actuator 4.



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ITEM	NO	PART DESCRIPTION
1	XI	BODY BRACKET
		MILD STEEL 1.00MM THK
2	XI	CABLE SLIDER
		MILD STEEL 0.75MM THK
3	XI	PIVOT LOCK
		MILD STEEL 0.75MM THK
4	XI	MOTOR BODY
		PURCHASED ITEM
5	XI	NUT-MOTOR BODY
		PURCHASED ITEM
6	XI	SPRING-MOTOR SHAFT
		SPRING STEEL DIA 0.50MM
7	XI	NIPPLE-MOTOR SHAFT
		MILD STEEL
8	X2	BOLT-SLIDER TO BODY
		MILD STEEL M4 X 14
9	X2	BUSHING-SLIDER BOLT-BODY
		NYLON
10	XI	BUSHING-SLIDER TO BODY
		NYLON
11	XI	BUSHING-PIVOT SLDR-BODY
		NYLON
12	XI	MOTOR SHAFT
		PURCHASED ITEM
13	XI	SCREW-CABLE RET. BRACKET
		MILD STEEL M6 X 6.5
14	XI	CABLE RETAINING BRACKET
		MILD STEEL 0.50MM THK
15	X2	WASHER-SLIDER BOLT-BODY
		MILD STEEL
16	X2	NUT-SLIDER BOLT TO BODY
		MILD STEEL M4
17	XI	SPRING-PIVOT LOCK
		SPRING STEEL DIA 1.00MM
18	XI	HOOD RELEASE CABLE

SMARTLATCH ASSY fig. 1, 2, 3 & 4
scale 1 : 1 (DO NOT SCALE)
JEREMY GREEN

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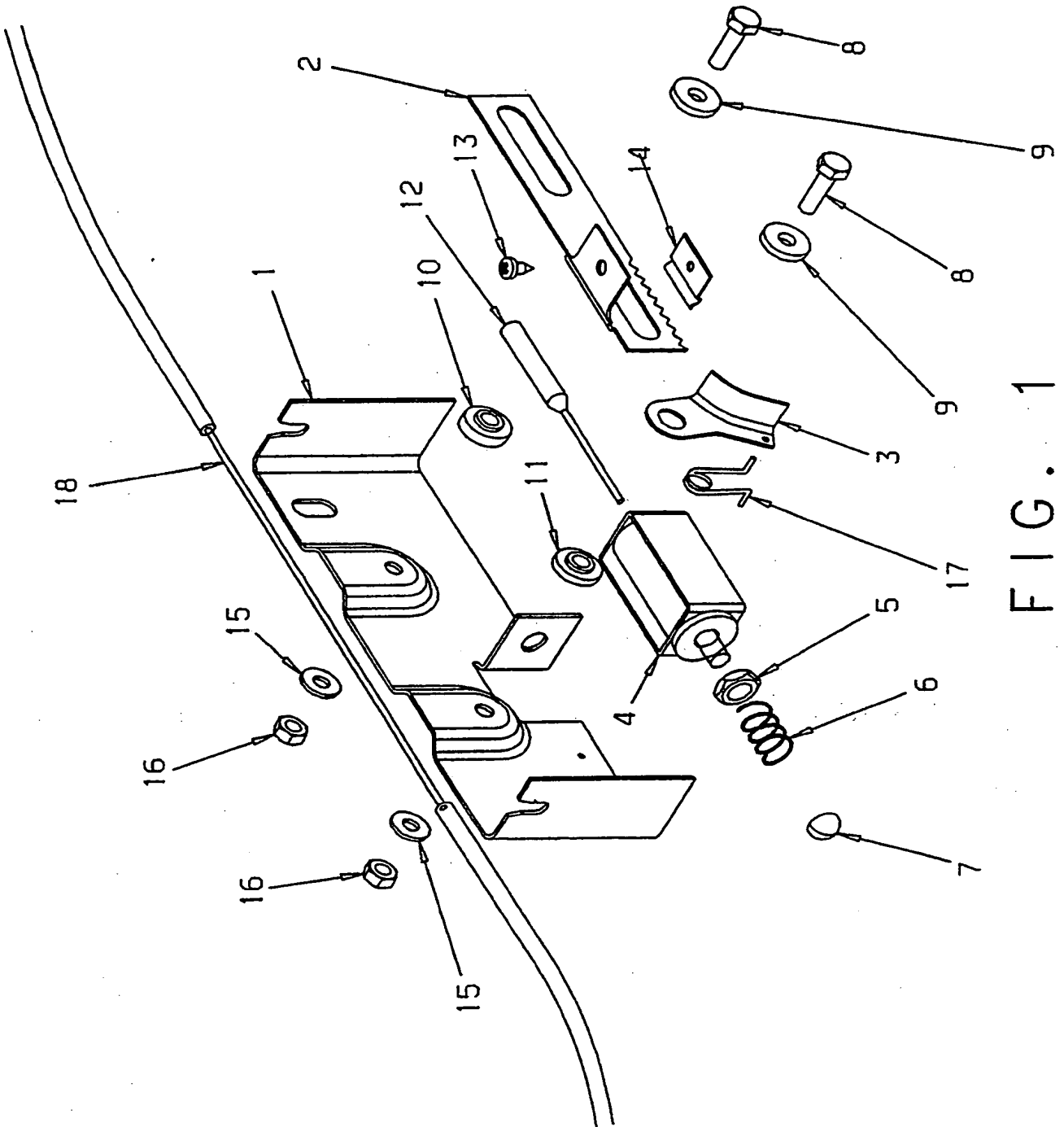
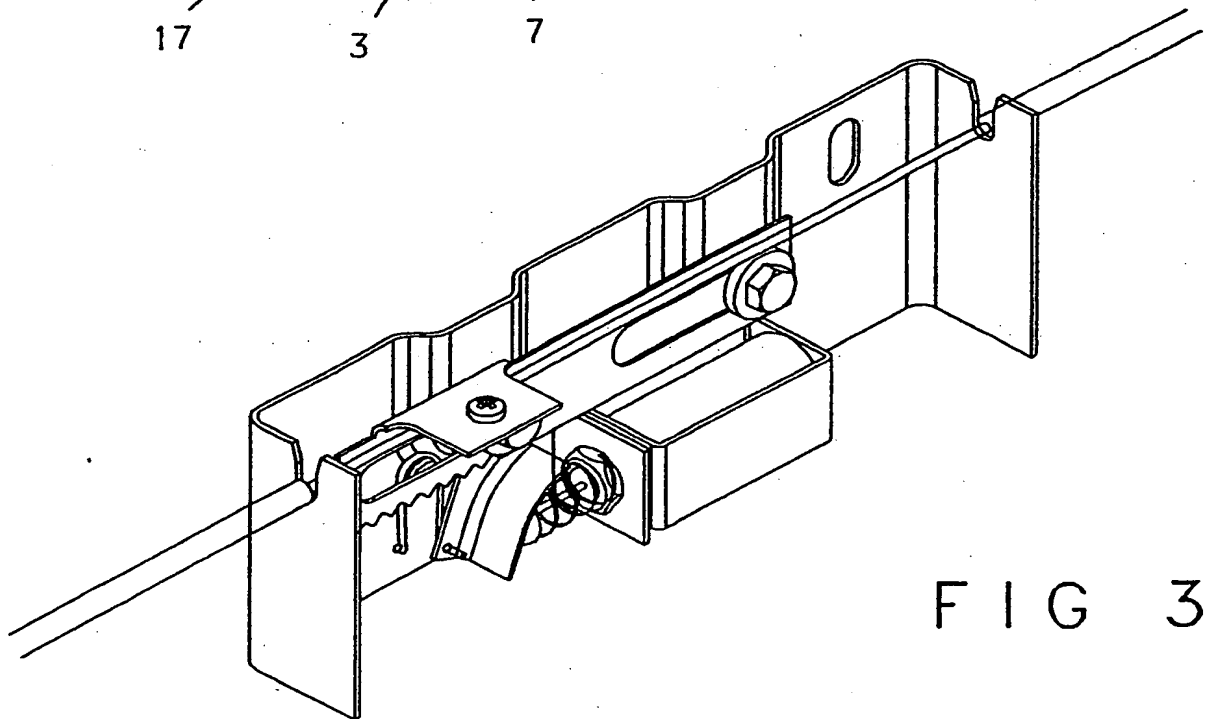
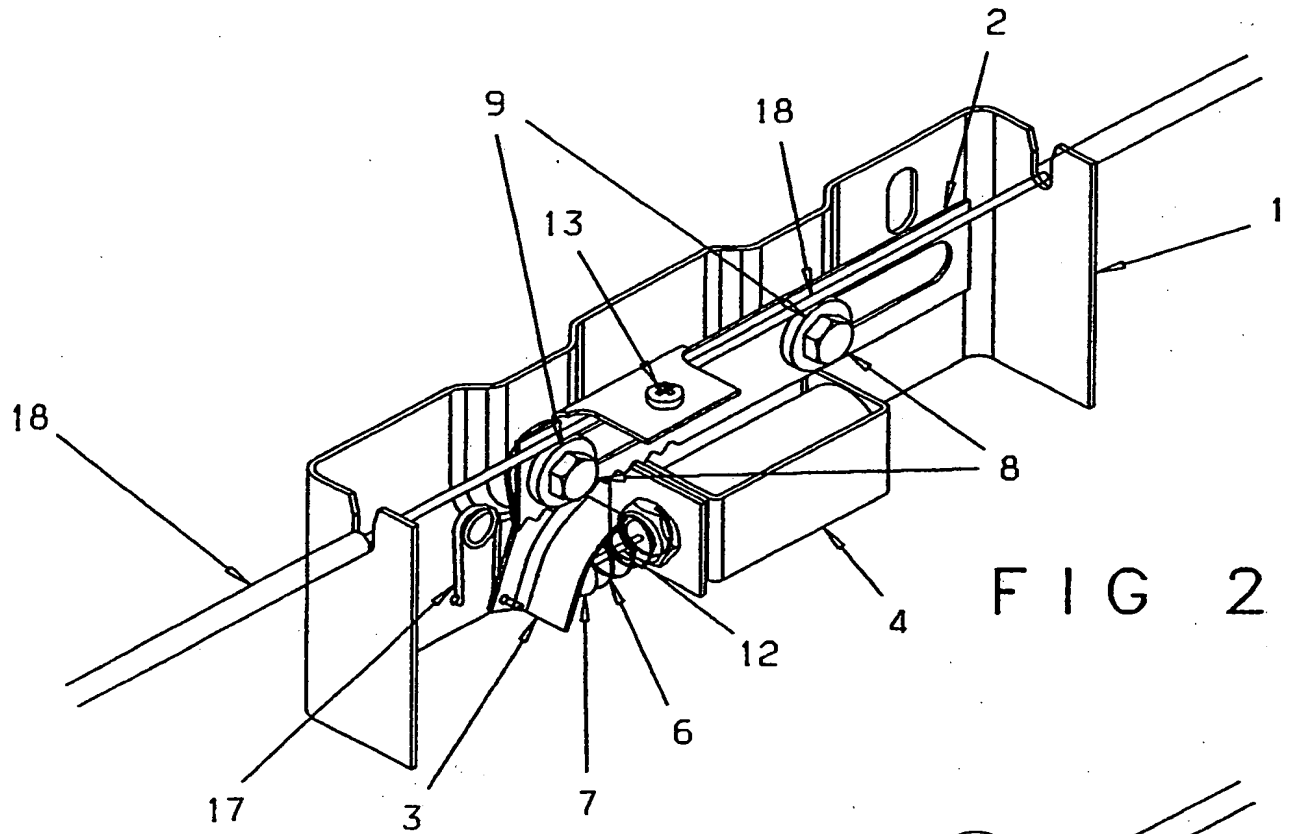


FIG. 1

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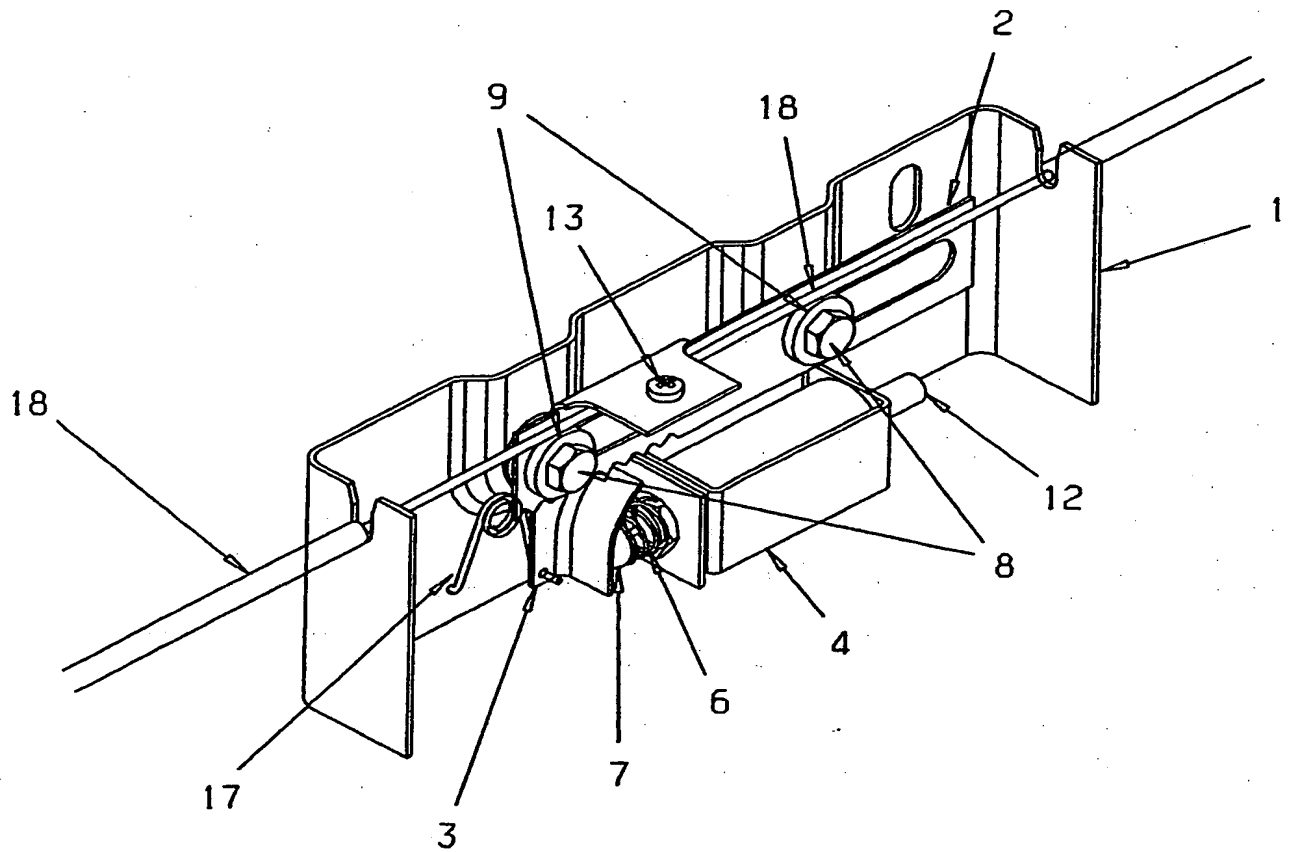


FIG. 4

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ELECTRO-MECHANICAL HOOD RELEASE CABLE LOCKING SYSTEM

This Invention relates to a theft deterrent system for a vehicle 'Hood Release System'

Vehicle 'Hood Release Systems' are, almost without exception, actuated from inside the vehicle by means of pulling by hand on the 'Hood Release' Lever. This action actuates, by means of mechanical operation the 'Hood lock' release. The movement of the 'Hood Release Lever' is translated directly by cable to the hood locks.

Vehicle systems currently in production allow easy access to the 'Engine Bay' once entry has been made to the inside of the vehicle, therefore it becomes a simple task to disconnect any fitted 'Electrical Vehicle Security System', such as a car alarm once entry has been forced to the cockpit of the vehicle. For example; A wouldbe vehicle thief may break the vehicle window or force the door lock and the car alarm will sound, but within a matter of seconds the vehicle hood is opened and the alarm system is disconnected. Failing simple disconnection the vehicle battery cable can be severed.

According to the present Invention, the 'Electro-Mechanical Hood Release Cable Locking System' disallows access to the 'Engine Bay' if the 'Vehicle Security System' is actuated. On triggering the 'Alarm' the 'Hood Release Cable' will be locked, thus access to the 'Engine Bay' becomes a major problem.

A specific embodiment of the Invention will now be described by the way of example with reference to the accompanying drawing.

fig. 1 Shows in perspective an exploded view of all the detailed parts within the Invention assembly.

fig. 2 Shows in perspective the complete system fitted to a vehicle 'Not actuated' in the 'Hood Closed' position.

fig. 3 Shows in perspective the complete system fitted to a vehicle 'Not actuated' whilst the hood is being released, via normal operation of the 'Vehicles' cable release system.

fig. 4 Shows in perspective the complete system fitted to a vehicle 'Actuated' by forced entry, thus 'Locking' the 'Vehicles' cable release system.

Referring to the drawings of the 'Hood Release Locking System'

The 'Body Bracket' 1. is mounted to the vehicle structure in the normal path of the 'Hood Release Cable' 18. with self tapping screw or similar means (not shown). The 'Hood Release Cable' outer sheath is split and between the split sheath the 'Body Bracket' 1. is fitted as shown in fig. 1.

The 'Hood Release Cable' 18. is clamped to the 'Cable Slider' 2. by means of the clamp arrangement 'Retaining Bracket' 14. and the 'Screw -Retaining Bracket' 13. as shown in fig. 1.

The assembly is mounted as described above to the vehicle as shown in fig. 2. The position shown in fig. 2. represents 'Hood closed' condition as the system has not been actuated by forced vehicle entry, therefore the vehicle hood can be opened using the normal procedure as designed by the vehicle manufacturer. The 'Hood Release Cable' 18. attached to the 'Cable Slider' 2. is free to move sliding on the 'Bushings-Slider Bolt To Body' 9, (2x) 'Bushings-Slider -Body' 10. and the 'Bushings-Pivot Slider-Body' 11. The sliding arrangement is secured with the 'Bolt-Slider To Body' 8, (2x) 'Washer-Slider Bolt-Body' 15 (2x) and the 'Nut-Slider Bolt To Body' 10. (2x) see fig. 1. The 'Bushings' 9,10,11 are designed to reduce friction on the 'Cable Slider' 2. and to prevent over tightening on assembly. The 'Motor Assy' (4,6,7 12) is attached to the 'Body Bracket' 1. with the 'Nut-Motor Body' 5.

The 'Pivot Lock' 3. is kept clear of the 'Cable Slider' 2. (In the unlocked or normal position) by the position of the 'Motor Shaft' 12. held in its normal position by the 'Spring-Motor Shaft' 6. the 'Motor Shaft' 12 is protected from running damage by the 'Nipple-Motor Shaft' 7. threaded to the end of the 'Motor Shaft' 12.

Opening the 'Hood' in the standard manner as specified by the manufacturer, i.e. pulling on the 'Hood Release' lever will pull the 'Hood Release Cable' 18. inner. The 'Cable', attached to the 'Cable Slider' 2. as previously described is free to slide to its designed 'Open' position as shown in fig. 3. This action disengages the hood locks as designed by the manufacturer, thus opening the 'Vehicle Hood'. On release of the hand from the 'Hood Release Lever' (not shown) the 'Hood Cable' 18 and the 'Cable Slider' 2. return to their normal position, as shown in fig. 2.

On vehicle entry violation the 'Vehicle Alarm System' (Fitted auto alarm, not shown) is triggered. The electrical feed to the 'Alarm System Siren' or 'Horn' is also fed to the 'Motor' 4. The solenoid type 'Motor' 4. retracts the 'Motor Shaft' 7. attached to the 'Nipple Motor Shaft' 7. compressing the 'Spring Motor Shaft' 6. as shown in fig. 4. The 'Pivot Lock' 3. rotates about the 'Bushings-Pivot Slider-Body' 11. clockwise due to the force exerted upon it from the 'Spring-Pivot Lock' 17. This action engages the 'Pivot Lock' 3. into the 'Cable Slider' 2. as shown in fig. 4., thus locking the 'Hood Release Cable' 18. and intum stopping the vehicle 'Hood' from being opened.

When the 'Vehicle Alarm System' (not shown) is disarmed in accordance to the alarm manufacturers procedure the electrical current to both the 'Siren' (not shown) and the 'Motor' 4. is stopped thus returning the system to its non actuated position as shown in fig.2.

CLAIMS

- (1) A 'Hood Release Locking System' by which the manufacturers 'Hood Release Cable' is locked on triggering of the 'Vehicles Alarm System'.
- (2) A 'Hood Release Locking System' as claimed in Claim 1 that prevents the 'Vehicle Alarm System' from being easily disconnected.
- (3) A 'Hood Release Locking System' as claimed in Claim 1 and Claim 2 that protect from theft the 'Vehicle' under hood components.
- (4) A 'Hood Release Locking System' as claimed in Claim 1 and Claim 2 that reduces the probability of successful vehicle theft.
- (5) A 'Hood Release Locking System' as claimed in Claim 1 and Claim 2 that does not effect the normal operation of the manufacturers 'Hood Opening Procedure' unless actuated by violation.
- (6) A 'Hood Release Locking System' as claimed in Claim 1 and Claim 2 that does not effect the normal operation of the manufacturers 'Hood Opening Procedure' in the event of a 'Flat Battery'.
- (7) A 'Hood Release Locking System' as claimed in Claim 1, Claim 2, Claim 3, and Claim 4 that can be installed as a 'Vehicle Purchase Option' with a 'Vehicle Alarm System'.
- (8) A 'Hood Release Locking System' as claimed in Claim 1, Claim 2, Claim 3, and Claim 4 that can be installed simply as an 'After Market' security option to a manufacturers installed 'Vehicle Alarm System'.
- (9) A 'Hood Release Locking System' as claimed in Claim 1, Claim 2, Claim 3, and Claim 4 that can be installed simply as an 'After Market' security option with the fitment of a 'Vehicle Alarm System'.
- (10) A 'Hood Release Locking System' subsequently as described herein with reference to the figures 1-4 of the accompanying drawing.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

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Relevant Technical Fields

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(ii) Int Cl (Ed.5) E05B (65/19; 47/06)

Search Examiner
MR P SILVIE

Date of completion of Search
29 JUNE 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE DATABASES: WPI

Documents considered relevant following a search in respect of Claims :-
ALL

Categories of documents

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|---|---|
| X: Document indicating lack of novelty or of inventive step. | P: Document published on or after the declared priority date but before the filing date of the present application. |
| Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. | E: Patent document published on or after, but with priority date earlier than, the filing date of the present application. |
| A: Document indicating technological background and/or state of the art. | &: Member of the same patent family; corresponding document. |

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2222204 A (YAHAS) see whole document	1 at least
X	US 4702094 A (CRIMESTOPPER) see column 3, lines 12-16	1 at least